EXTENDED LEARNING INSTITUTE NORTHERN VIRGINIA COMMUNITY COLLEGE

COURSE GUIDE

MTH 120

Introduction to Mathematics

ELI HOTLINE: (703) 323-3347 V/TDD: (703) 323-3717

Revised 8/01



Copyright © 2001 by Northern Virginia Community College. All rights reserved.

MTH 120 COURSE GUIDE

How to study and what to study

1. Homework

In the Weekly Schedule in this Course Guide, you are asked to solve specific problems from the text. This homework will <u>not</u> be collected. All the assignments are odd-numbered exercises from your text. Thus, you have the answers in the back of the book and the complete solutions in the solution manual. If you have any questions or difficulties, please contact your instructor by phone or via e-mail.

The homework assignment provides you with a **minimum** amount of practice with the concepts and techniques. If you feel this is sufficient for you to understand and remember the course material, fine. If not, you should work more problems until you feel confident that you have grasped the concepts and the techniques.

2. Videotapes

The publisher of your text has provided us with a set of videotapes. These videotapes can be regarded as a series of **mini-lectures** (not complete lessons) on each section of the book. Unfortunately they were not complete and they did not cover every section of the text. With the help of my colleagues, we are the in process of completing these tapes. Hopefully they will be ready by the time you need them.

Watching these tapes is not mandatory; you can skip them if you feel the text is clear and you have no difficulties. However, if following the text is difficult for you, watching these tapes can provide you with extra help.

These tapes are available for viewing in our libraries as well as in our math centers. They can not be checked out; however, if you would like to have them at home, they can be rented. Information on how to rent them will be sent to you soon after you register for the course.

3. Quizzes

When you have finished a specific number of steps, then you will be ready for a quiz. At this point you should send me an email message (dizadi@nvcc.vccs.edu) requesting the appropriate quiz. *Make sure to request your quizzes by the <u>code provided for each quiz</u>, <i>not by the chapter of your text*. When I receive your request, I will email you the quiz. Please complete the quiz immediately and email me your answers. The quiz should take no longer then an hour to complete. In case there are unexpected problems, I will wait for up to 24 hours for your answers. After that, I will not accept your answers or give you any points for that quiz.

The best time to take quizzes is during my office hours. I will be able to send you the quiz as soon as you request it, and I may have time to grade it as soon as you submit your answers. Please see my web page (<u>eli.nvcc.vccs.edu/faculty/izadi.htm</u>) or call the ELI Hotline (703-323-3347) for my current office hours.

Your grade on each quiz is worth 5 percent (5 points) of your final grade. For example if your grade on a quiz is 100, then you have earned 5 points and if your grade is 85 you have earned 4.25 points or for 70 you will earn 3.5 points. You have a total of 8 quizzes and your points on these quizzes amount to a total of 40 points out 100 possible points.

When you complete your quiz, send me your answers in a simple email (*no attachments please; I will not open anything which comes as an attachment*). Your quizzes are multiple choice questions (just like your exams).

E-mail me your answers in the following format:

YOUR NAME

YOUR SS#

ANSWER TO: Q1, or Q2, or Q3, and so on ... (not quiz #1, quiz #2, quiz #3, ...)

a (if a is the correct answer to question # 1)
e (if e is the correct answer to question # 2)
d (if d is the correct answer to question #3)
4.
5.
.

and so on.

You can request only *one quiz at a time;* requests for multiple quizzes will not be honored. I will e-mail you your grade as soon as I see your quiz and grade it. *The correct answer to missed questions will not be supplied to you*. However, if you mail or e-mail me your detailed work, I will gladly look at it and point out your mistake, and return it to you.

4. Midterm Exam (exam # 1)

You will take your midterm, as well as your final, in one of the five NVCC testing centers. See the course *Syllabus* for testing center locations and phone numbers, and for information about proctors for those who live outside the NVCC area. Call the testing center before you go to make sure it will be open long enough for you to complete the exam. Take along a photo ID **and the appropriate exam pass from the** *Syllabus***.**

The midterm exam will be worth 30% of your grade. It will consist of problems similar to your homework and quizzes. Although there is no time limit for taking your midterm and your final, it should not take you more than one and a half hours. The midterm covers everything you have studied up to this point. You will not be allowed to use any books or notes during the exams, but you may use a calculator if you wish.

Your grade will be mailed to you as soon as I receive your test. The correct answer to missed questions will not be supplied. You can, however, come and review your exams during my office hours at ELI.

5. Final Exam (exam # 2)

You will take your final exam in one of our testing center; again *make sure to take your exam pass with you*. Your final covers the second half of the material after the midterm. The final exam will be 30% of your course grade. After I receive your final, I will mail you a note indicating your grade for the final exam, your semester average, and the grade you will receive for the course.

6. Where and How to Get Help

- a) You can always contact me by phone, e-mail, or mail. My office hours are posted on my web page (<u>eli.nvcc.vccs.edu/faculty/izadi.htm</u>), or you can call the ELI Hotline (703-323-3347) to obtain them.
- b) Your textbook has an excellent detailed solution manual, which can be very helpful.
- c) We have a math center for walk in tutorial service in all five campuses. For the hours of operation please contact the campus of your choice.
- d) NVCC provides free private tutoring for all our students up to ten hours per semester. For information regarding this service please contact your home campus counseling center.

- e) The publisher of your textbook has provided tutoring service by phone as well as over the Internet; this service is free if you buy a new text. However, if you by a used one, you can also purchase this service separately. Information regarding how to use this service comes with your new textbook, which is shrink-wrapped with the solution manual. The hours of operation of this center are usually during the afternoon and evening.
- f) Finally, no one can help you better than yourself by being consistent. This means doing a little every day, perhaps an hour or so. This way you learn and repeat the concepts every day; you will learn them in a natural way and remember them naturally without memorizing them.

7. Step by Step and Weekly Schedule

Overview

If you follow the suggested schedule, then you will complete the course in sixteen weeks, which is the length of a normal semester. This schedule is not rigid. You can proceed faster or slower if you so desire. However, please note the following:

If you do not submit your first quiz by your Withdrawal date (given in your Syllabus), then you will be administratively withdrawn from the course.

In order to qualify for the grade of I (Incomplete) and a four month extension, you <u>must</u> complete the first five quizzes and the midterm with a grade of C or better by the End of <u>Enrollment date</u> given in your Syllabus.

Your request for an Incomplete and/or Withdrawal grade should be mailed directly to *ELI*, including your reason for requesting that grade.

If you have submitted at least one quiz, but are unable to complete the requirements for an I grade by your end-of-enrollment date, then you <u>must mail ELI your request for</u> <u>withdrawal. (The form is in your syllabus.)</u> If you do not take appropriate action by the end-of-enrollment date, you will fail the course.

Week 1&2 (STEPS 1-5)

CHAPTER 1 (The Art of Problem Solving)

Step 1

Section 1.1 (Solving Problems by Inductive Reasoning).

- a) Read pages 2-7.
- b) Watch the video for this section, if so desired.
- c) Solve all odd-numbered problems 1-45, pages 8-9.

<u>Step 2</u>

Section 1.2 (An application of Inductive Reasoning).

- a) Read pages 11-17.
- b) Watch the video for this section, if so desired.
- c) Solve all odd-numbered problems 1-29, pages 18-19.

Step 3

Section 1.3 (Strategies for Problem Solving).

- a) Read pages 21-27.
- b) Watch the video for this section, if so desired.
- c) Solve all odd-numbered problems 1-29, pages 28-29.

Step 4

Section 1.4 (Calculating, Estimating, and Reading Graphs)

- a) Read pages 33-36.
- b) Watch the video for this section, if so desired.
- c) Solve all odd-numbered problems 1-53, pages 37-39.

<u>Step 5</u>

At this point you are ready for quiz # 1. Please e-mail me (<u>dizadi@nvcc.vccs.edu</u>) and request **Q1** (**not quiz # 1**).

WEEKS 3&4 (STEPS 6-10)

CHAPTER 2 (Basic Concepts of Set Theory)

Step 6

Section 2.1 (Symbols and Terminology)

- a) Read pages 53-57.
- b) Watch the video for this section, if so desired.
- c) Solve every other odd-numbered (1,5,9,...) problem on pages 57-59.

<u>Step 7</u>

Section 2.2 (Venn Diagrams and Subsets)

- a) Read pages 60-65.
- b) Watch the video for this section, if so desired.
- c) Solve all odd-numbered problems 1-59 on pages 65-66.

<u>Step 8</u>

Section 2.3 (Set Operation and Cartesian Product)

- a) Read pages 68-78.
- b) Watch the video for this section, if so desired.
- c) Solve every other odd-numbered problems 1-125 (1,5,9,...) on pages78-82.

<u>Step 9</u>

Section 2.4 (Cardinal Numbers and Surveys)

- a) Read pages 82-85.
- b) Watch the video for this section, if so desired.
- c) Solve all odd-numbered problems 1-25 on pages 85-87.

<u>Step 10</u>

At this point you are ready for quiz # 2. Please e-mail me (<u>dizadi@nvcc.vccs.edu</u>) and request **Q2** (not quiz #2).

WEEKS 5&6 (Steps 11-15)

CHAPTER 3 (Introduction to Logic)

<u>Step 11</u>

Section 3.1 (Statements and Quantifiers)

- a) Read pages101-105.
- b) Watch the video for this section, if so desired.
- c) Solve every other odd-numbered problem (1,5,9,...) on pages 106-107.

<u>Step 12</u>

Section 3.2 (Truth Tables and Equivalent Statements)

- a) Read pages 108-117.
- b) Watch the video for this section, if so desired.
- c) Solve every other odd-numbered exercise 1-73 (1,5,9,...) on pages 118-119.

<u>Step 13</u>

Section 3.3 (The Conditional and Circuits)

Omit all the topics on circuits.

- a) Read pages 120-125.
- b) Watch the video for this section, if so desired.
- c) Solve every other odd-numbered exercise 1-85 (1,5,9,...) on pages 127-129.

<u>Step 14</u>

Section 3.4 (More on the Conditional)

- a) Read pages 130-134.
- b) Watch the video for this section, if so desired.
- c) Solve all odd-numbered exercises 1-41 on page 135.

<u>Step 15</u>

At this point you are ready for quiz # 3. Please e-mail me (<u>dizadi@nvcc.vccs.edu</u>) and request Q3 (not quiz #3).

WEEKS 7& 8 (Steps 16-23)

CHAPTERS 4&5 (Numeration & Number Theory)

<u>Step 16</u>

Section 4.1 (Historical Numeration Systems)

- a) Read pages 160-167.
- b) Watch the video for this section, if so desired.
- c) No homework assignments for this section but read it carefully.

<u>Step 17</u>

Section 4.2 (Arithmetic in Hindu-Arabic System)

- a) Read pages 170-177.
- b) Watch the video for this section, if so desired.
- c) Solve all odd-numbered exercises 1-51 on pages 177-178.

<u>Step 18</u>

Section 4.3 (Conversion Between Number Bases)

- a) Read pages 179-187.
- b) Watch the video for this section, if so desired.
- c) Solve all odd-numbered exercises 1-55 on pages 187-188.

<u>Step 19</u>

Section 5.1 (Prime and Composite Numbers)

- a) Read pages 209-217.
- b) Watch the video for this section, if so desired.
- c) Solve every other odd-numbered exercise 1-85 (1,5,9,...) on pages 217-219.

<u>Step 20</u>

Section 5.2 (Selected Topics from Number Theory)

- a) Read pages 220-224.
- b) Watch the video for this section, if so desired.
- c) Solve all odd-numbered problems 1-35 on pages 224-225.

<u>Step 21</u>

Section 5.3 (Greatest Common Factor and Least Common Multiple)

- a) Read pages 227-231.
- b) Watch the video for this section, if so desired.
- c) Solve all odd-numbered exercises 1-49 on pages 232-233.

<u>Step 22</u>

At this time you are ready for your fourth quiz. Please e-mail me (<u>dizadi@nvcc.vccs.edu</u>) and request **Q4** (**not quiz # 4**).

<u>Step 23</u>

Take the midterm (exam # 1). To prepare, review your past quizzes; in particular, carefully study the problems you missed on your quizzes and related topics. You must take this exam in one of our testing centers. <u>Make sure to take your exam pass and a pictured ID, and call the testing center for hours of operation. Keep in mind that this test is NOT an open book test and you are NOT allowed to have any notes. You may use a calculator if you wish.</u>

WEEKS 9&10 (Steps 24-29)

CHAPTER 6 (Real Numbers and Their Representation)

<u>Step 24</u>

Section 6.1 (Real Numbers, Order, and Absolute Value)

- a) Read pages 260-267.
- b) Watch the video for this section, if so desired.
- c) Solve every other odd-numbered exercise (1,5,9,...) on pages 267-270.

<u>Step 25</u>

Section 6.2 (Operations, Properties, and Applications of Real Numbers)

- a) Read pages 270-278.
- b) Watch the video for this section, if so desired.
- c) Solve every other odd-numbered exercise (1,5,9,...) on pages 279-283.

<u>Step 26</u>

Section 6.3 (Rational Numbers and Decimal Representation)

- a) Read pages 283-293.
- b) Watch the video for this section, if so desired.
- c) Solve every other odd-numbered exercise (1,5,9,...) on pages 294-299.

<u>Step 27</u>

Section 6.4 (Irrational Numbers and Decimal Representation)

- a) Read pages 299-306.
- b) Watch the video for this section, if so desired.
- c) Solve all odd-numbered exercises 1-43 and every other odd-numbered exercise 45-63 on pages 306-309.

<u>Step 28</u>

Section 6.5 (Applications of Decimals and Percent)

- a) Read pages 309-317.
- b) Watch the video for this section, if so desired.
- c) Solve every other odd-numbered exercise 1-85 on pages 317-322.

<u>Step 29</u>

At this point you are ready for your fifth quiz. Please e-mail me (<u>dizadi@nvcc.vccs.edu</u>) and request **Q5** (not quiz # 5).

WEEKS 11&12 (Steps 30-38)

CHAPTERS 7& 8 (Basic Algebra & Systems of Linear Equations)

<u>Step 30</u>

Section 7.1 (Linear equations)

- a) Read pages 332-339.
- b) Watch the video for this section, if so desired.
- c) Solve every other odd-numbered exercise (1,5,9,...) on pages 339-341.

<u>Step 31</u>

Section 7.2 (Application of Linear Equations)

- a) Read pages 342-351.
- b) Watch the video for this section, if so desired.
- c) Solve every other odd-numbered exercise (1,5,9,...) on pages 351-356.

<u>Step 32</u>

Section 7.4 (Linear Inequalities)

- a) Read pages 370-376
- b) Watch the video for this section, if so desired.
- c) Solve all odd-numbered exercises 1-47 on pages 377-378.

<u>Step 33</u>

Section 7.5 (Properties of Exponents and Scientific Notation)

- a) Read pages 379-389.
- b) Watch the video for this section, if so desired.
- c) Solve all odd-numbered exercises 1-81 on pages 390-391.

<u>Step 34</u>

Section 8.1 (Rectangular coordinate system)

Read only page 416 up to "The Distance formula" (omit the rest of this section), and do all odd-numbered exercises 1-25 on page 424.

<u>Step 35</u>

Section 8.2 (Lines and Their Slope)

- a) Read pages 426-432.
- b) Watch the video for this section, if so desired.
- c) Solve all odd-numbered exercises 1-61 on pages 433-435.

<u>Step 36</u>

Section 8.3 (Equation of a Line and Linear Models)

- a) Read pages 437-442.
- b) Watch the video for this section, if so desired.
- c) Solve all odd-numbered exercises 1-71 on pages 442-446.

<u>Step 37</u>

Section 8.7 (Systems of Equations and Applications)

- a) Read pages 483-489 (omit "Linear Systems in Three Variables"), then read pages 492-496.
- b) Watch the video for this section, if so desired.
- c) Solve all odd-numbered exercises 1-31 and 47-75.

<u>Step 38</u>

At this point you are ready for your sixth quiz. Please e-mail me (<u>dizadi@nvcc.vccs.edu</u>) and request **Q6** (not quiz # 6).

WEEKS 13 & 14 (Steps 39-45)

METRIC SYSTEM and GEOMETRY

<u>Step 39</u>

Appendix on Metric System

- a) Read pages A-1 through A-5 (these pages start after page 994).
- b) Watch the video for this part, if so desired.
- c) Solve all odd-numbered exercises 1-95 on pages A-5 through A-7.

<u>Step 40</u>

Section 9.1 (Points, Lines, Planes, and Angles)

- a) Read pages 522-528.
- b) Watch the video for this section, if so desired.
- c) Do every other odd-numbered problem (1,5,9,...) on pages 529-532.

<u>Step 41</u>

Section 9.2 (Curves, Polygons, and Circles)

- a) Read pages 532-538.
- b) Watch the video for this section, if so desired.
- c) Solve all odd-numbered exercises on pages 538-541.

<u>Step 42</u>

Section 9.3 (Perimeter, Area, and Circumference)

- a) Read pages 542-550.
- b) Watch the video for this section, if so desired.
- c) Solve every other odd-numbered exercise on pages 550-555.

<u>Step 43</u>

Section 9.4 (Geometry of Triangles)

- a) Read pages 556-562.
- b) Watch the video for this section, if so desired.
- c) Solve every other odd-numbered exercise on pages 563-569.

<u>Step 44</u>

Section 9.5 (Space Figures, Volume, and Surface Area)

- a) Read pages 575-581.
- b) Watch the video for this section, if so desired.
- c) Do all odd-numbered exercises 1-55 on pages 582-585.

<u>Step 45</u>

At this point you are ready for your seventh quiz. Please e-mail me (<u>dizadi@nvcc.vccs.edu</u>) and request **Q7** (**not quiz # 7**).

WEEKS 15&16 (Steps 46-52)

CHAPTER 12 (Statistics)

<u>Step 46</u>

Section 12.1 (Frequency, Distributions, and Graphs)

- a) Read pages 710-718.
- b) Watch the video for this section, if so desired.
- c) Solve all odd-numbered exercises 1-41 on pages 718-724.

<u>Step 47</u>

Section 12.2 (Measure of Central Tendency)

- a) Read pages 724-734.
- b) Watch the video for this section, if so desired.
- c) Solve all odd-numbered problems 1-51 on pages 734-738.

<u>Step 48</u>

Section 12.3 (Measure of Dispersion)

- a) Read pages 739-743 (omit "Chebyshev's Theorem").
- b) Watch the video for this section, if so desired.
- c) Solve all odd-numbered problems 1-31 on pages 745-746.

Step 49

Section 12.4 (Measure of Position)

- a) Read pages 748-752.
- b) Watch the video for this section, if so desired.
- c) Solve all odd-numbered problems 1-19 on pages 753-755.

<u>Step 50</u>

Section 12.5 (The Normal Distribution)

- a) Read pages 756-764.
- b) Watch the video for this section, if so desired.
- c) Solve all odd-numbered problems 1-35 on pages 764-765.

<u>Step 51</u>

At this point you are ready for your eighth quiz. Please e-mail me (<u>dizadi@nvcc.vccs.edu</u>) and request **Q8** (not quiz #8).

<u>Step 52</u>

Take your final exam (exam #2). To get ready for this exam review steps 24-49 and quizzes 5-8. In particular, pay attention to the questions you missed on your quizzes and study the related concepts. *Make sure to take your exam pass with you to the testing center and call the testing center for the hours of operation.*

PS

It was a pleasure having you in this course. Good luck and best wishes in pursuit of your education.